The Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.-46. (cancelled)

47. (currently amended):

A method for secure in-band management of a network device that provides routing and forwarding services, the method comprising:

transferring data between core data links and customer data links where the customer data links including Virtual Private Network (VPN) data links and non-VPN data links;

dedicating one of the VPN data links to the transfer of management commands;

~~configuring a virtual private network (VPN) for the network device;~~

linking the dedicated VPN data link to a source of ~~non-VPN~~ management commands;

using the VPN to ~~carry the non-VPN~~ transfer management commands from the source of the ~~non-VPN~~ management commands to the network device; and

transferring management commands between the dedicated VPN data link and a router configuration management module.

~~using the network device to forward the non-VPN management commands to a management port of the network device through a VPN module.~~

48. (currently amended):

The method of claim 47 wherein <u>transferring management commands between the dedicated</u> <u>VPN data link and a router configuration management module includes transferring</u> <u>management commands through a management port of the router configuration management</u> <u>module.</u> ~~the network device includes a routing and forwarding module and a management~~ ~~VPN module coupled to the routing and forwarding module.~~

49. (previously presented):

The method of claim 47 wherein the network device is one of a network switch, a network bridge, a network hub, and a network gateway.

50. (previously presented):

The method of claim 47 wherein the network device can perform one of Internet Protocol (IP) services, Multiprotocol Label Switching (MPLS) services, and Asynchronous Transfer Mode (ATM) services.

51. (currently amended):

The method of claim 47 wherein the source of the ~~non-VPN~~ management commands is one of a ~~non-VPN~~ management device and a ~~non-VPN~~ management function.

52. (currently amended):

A network device that provides routing and forwarding ~~services for a data network,~~ <u>services,</u> the network device comprising:

a routing and forwarding module to <u>transfer data between core data links and customer</u> <u>data links</u> ~~forward data received from the data network on an input data link to an output~~ ~~data link~~ in accordance with source and destination information contained in the ~~data;~~ <u>data, the customer data links including Virtual Private Network (VPN) data links and</u> <u>non-VPN data links;</u>

a router configuration <u>management</u> module to perform ~~non-VPN~~ management operations for the network ~~device;~~ <u>device according to received management traffic; and</u>

~~a management port coupled to the router configuration module to receive the non-VPN~~ ~~management commands for the router configuration module; and~~

a management VPN module coupled to the routing and forwarding ~~module~~ <u>module, to</u> <u>one of the VPN data links,</u> and to the management ~~port,~~ <u>VPN module,</u> the management VPN module to <u>transfer management traffic between the router configuration</u> <u>management module and the one of the VPN data links.</u> ~~provide non-VPN management~~ ~~commands to the management port from a virtual private network (VPN), wherein the~~ ~~non-VPN management commands are delivered to the routing and forwarding module.~~

<u>a management port coupled to the router configuration module to receive the non-VPN</u> <u>management commands for the router configuration module; and</u>

53. (previously presented):

The network device of claim 52 wherein the network device is one of a network switch, a network bridge, a network hub, and a network gateway.

54. (previously presented):

The network device of claim 52 wherein the network device can perform one of Internet

Protocol (IP) services, Multiprotocol Label Switching (MPLS) services, and Asynchronous

Transfer Mode (ATM) services.

55. (currently amended):

The network device of claim 52 wherein the source of the ~~non-VPN~~ management commands

is one of a ~~non-VPN~~ management device and a ~~non-VPN~~ management function.

56. (currently amended):

A network device that provides routing and forwarding services, the network device

comprising:

<u>means for transferring data between core data links and customer data links where the</u>

<u>customer data links including Virtual Private Network (VPN) data links and non-VPN</u>

<u>data links;</u>

<u>means for dedicating one of the VPN data links to the transfer of management traffic;</u>

~~means for configuring a virtual private network (VPN) for the network device;~~

means for linking the <u>dedicated</u> VPN <u>data link</u> to a source of ~~non-VPN~~ management

commands;

means for using the VPN to ~~carry the non-VPN~~ <u>transfer</u> management commands from the

source of the ~~non-VPN~~ management commands to the network device; and

means for transferring management commands between the dedicated VPN data link and

a router configuration management module.

~~means for using the network device to forward the non-VPN management commands to a~~

~~management port of the network device through a VPN module.~~

57. (currently amended):

The network device of claim 56 wherein the means for transferring management commands

between the dedicated VPN data link and a router configuration management module

includes means for transferring management commands through a management port of the

router configuration management module. ~~using the network device to forward the non-VPN~~

~~management commands to a management port of the network device through a VPN module~~

~~includes a routing and forwarding module and a management VPN module coupled to the~~

~~routing and forwarding module.~~

58. (previously presented):

The network device of claim 56 wherein the network device is one of a network switch, a

network bridge, a network hub, and a network gateway.

59. (previously presented):

The network device of claim 56 wherein the network device can perform one of Internet

Protocol (IP) services, Multiprotocol Label Switching (MPLS) services, and Asynchronous

Transfer Mode (ATM) services.

60. (currently amended):

The network device of claim 56 wherein the source of the ~~non-VPN~~ management commands

is one of a ~~non-VPN~~ management device and a ~~non-VPN~~ management function.

61. (currently amended):

A machine-readable medium providing instructions, which if executed by a processor, cause

the processor to perform an operation comprising:

transferring data between core data links and customer data links where the customer data

links including Virtual Private Network (VPN) data links and non-VPN data links;

dedicating one of the VPN data links to the transfer of management commands;

~~configuring a virtual private network (VPN) for a network device;~~

linking the dedicated VPN data link to a source of ~~non-VPN~~ management commands;

using the VPN to ~~carry the non-VPN~~ transfer management commands from the source of

the ~~non-VPN~~ management commands to the network device; and

transferring management commands between the dedicated VPN data link and a router

configuration management module.

~~using the network device to forward the non-VPN management commands to a~~

~~management port of the network device through a VPN module.~~

62. (currently amended):

The machine-readable medium of claim 61 wherein transferring management commands

between the dedicated VPN data link and a router configuration management module

includes transferring management commands through a management port of the router

configuration management module. ~~the network device includes a routing and forwarding~~

~~module and a management VPN module coupled to the routing and forwarding module.~~

63. (previously presented):

The machine-readable medium of claim 61 wherein the network device is one of a network

switch, a network bridge, a network hub, and a network gateway.

64. (previously presented):

The machine-readable medium of claim 61, further providing instructions, which if executed

by the processor, further cause the processor to perform an operation comprising one of

performing Internet Protocol (IP) services, performing Multiprotocol Label Switching

(MPLS) services, and performing Asynchronous Transfer Mode (ATM) services.

65. (currently amended):

The machine-readable medium of claim 61 wherein the source of the ~~non-VPN~~ management

commands is one of a ~~non-VPN~~ management device and a ~~non-VPN~~ management function.

66. (currently amended):

A data network comprising:

a plurality of network devices that provide routing and forwarding services for the data

~~network; and~~ network including transferring data between core data links and customer

data links, the customer data links including Virtual Private Network (VPN) data links

and non-VPN data links, ~~a source of non-VPN management commands transmitted to the~~

~~plurality of network devices using a virtual private network (VPN),~~ wherein each of the plurality of network devices includes:

a routing and forwarding module to <u>transfer data between core data links and customer data links</u> ~~forward data received from the data network on an input data link to an output data link~~ in accordance with source and destination information contained in the data;

a router configuration <u>management</u> module to perform ~~non-VPN~~ management operations for the network ~~device;~~ <u>device according to received management traffic; and</u>

~~a management port coupled to the router configuration module to receive non-VPN management commands for the router configuration module; and~~

a management VPN module coupled to the routing and forwarding ~~module~~ <u>module, to one of the VPN data links,</u> and to the management ~~port,~~ <u>VPN module,</u> the management VPN module to <u>transfer management traffic between the router configuration management module and the one of the VPN data links.</u> ~~provide non-VPN management commands to the management port from the source of the non-VPN management commands.~~

67. (previously presented):

The data network of claim 66 wherein each of the plurality of network devices is one of a network switch, a network bridge, a network hub, and a network gateway.

68. (previously presented):

The data network of claim 66 wherein the plurality of network devices can perform one of

Internet Protocol (IP) services, Multiprotocol Label Switching (MPLS) services, and

Asynchronous Transfer Mode (ATM) services.

69. (currently amended):

The data network of claim 66 wherein the source of the ~~non-VPN~~ management commands is

one of a ~~non-VPN~~ management device and a ~~non-VPN~~ management function.